Integrated Landbird Monitoring in Montana: A grid-based, regional approach

Bird monitoring has been an important focus of avian conservation programs in North American for over 50 years. Effective monitoring programs can provide information on bird population status and trends, influence of natural and human-induced land changes on birds, and can inform management and conservation practices. For example, integration of monitoring data with management techniques led to the recovery of peregrine falcons and bald eagles across the continent. In 2007, partners in the North American Bird Conservation Initiative (NABCI) published a guide to monitoring titled "Opportunities for Improving Avian Monitoring". The authors identified four main goals of a monitoring program:

1. Fully integrate monitoring into bird management and conservation practices and ensure that monitoring is aligned with management and conservation priorities
2. Coordinate monitoring programs among organizations and integrate them
3. Increase the value of monitoring information by improving statistical design
4. Maintain bird population monitoring data in modern data management systems

The NABCI committee identified Bird Conservation Regions (BCR; Fig 1) as discrete geographic areas that characterize similar bird communities, habitats, and management issues, and thus, are appropriate scales for bird conservation planning and monitoring. Rocky Mountain Bird Observatory and partners responded to NABCI's recommendations for bird monitoring and designed a BCR grid-based monitoring program. Members of the Montana Bird Conservation Partnership, including state, federal, tribal, and non-governmental organizations, agreed to implement this program in 2009. The focal area for 2009 was BCR 17 (BCR 17; Fig. 1). In 2010 we expanded to implement throughout Montana, including BCRs 10, 11 and 17. Implementation also occurs throughout Colorado, Wyoming and all of BCR17. Surveys will be initiated on Forest Service lands in northern Idaho in 2011.

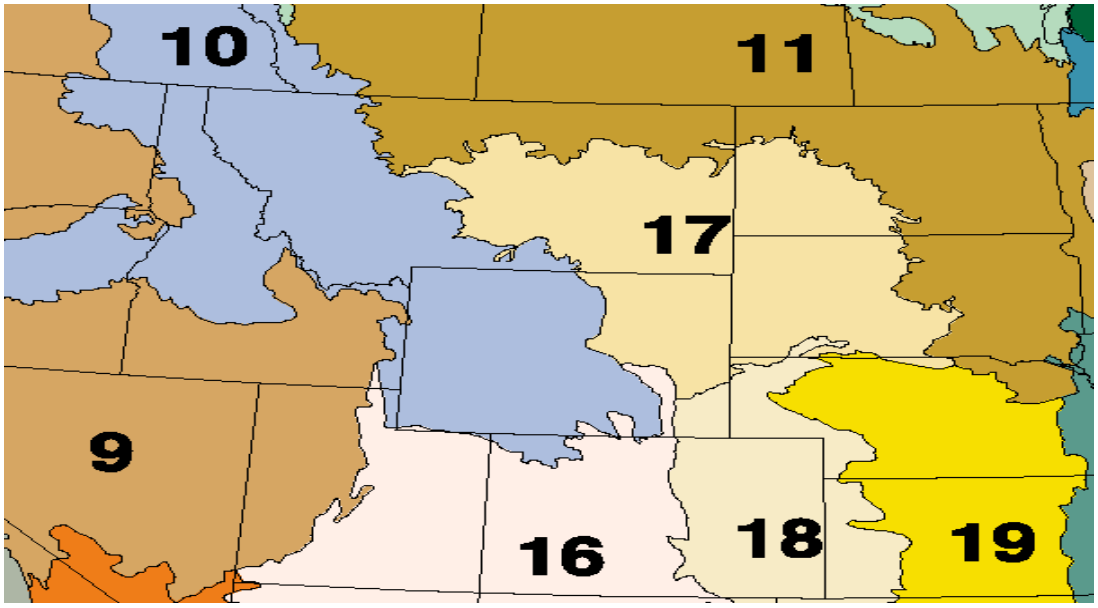

Figure 1. Bird Conservation Regions in Montana

Benefits for Montana's Bird Conservation Program:

- An integrated program leverages funding of multiple partners so that what we can implement together is far greater than what we could achieve if we operated independently.
- Baseline data is obtained and analyzed to assess state and regional trends in bird populations.
- Status and trend data can be used to focus special species or habitat initiatives with measureable objectives. These initiatives help keep species off the threatened and endangered species list.
- Comparative data can be used to evaluate effects of large-scale management action.
- We expect to collect information on over 80 bird species breeding across Montana, including several species of conservation concern such as, grasshopper sparrow, McCown's longspur, and Sprague's pipit.

Monitoring design:

- The sampling frame is an individual BCR so inference on bird populations can be made to this scale.
- The design is flexible to allow more sampling in targeted areas within a BCR to get population estimates at smaller scales or on focused management issues while still informing estimates at the BCR scale.
- The sampling design is a generalized random tessellation stratified design that ensures a spatially balanced sample even when there is fluctuation in funding among years.
- Stratification is based on unchanging physical features, such as political boundaries, rather than ephemeral habitat conditions that can complicate data analysis.
- Sampling methods involve point counts within selected grid cells across the BCR.
- Bird-habitat associations can be identified after data collection.

Approach:

- Private landowners are contacted with a letter and follow-up phone call to acquire permission to access private lands.
- Landowners participating in the program have the option of buffered locations in the database to protect their privacy. They also have access to the data collected on their property.
- Montana Natural Heritage Program, Avian Science Center, Confederated Salish and Kootenai Tribes, and Rocky Mountain Bird Observatory conduct field surveys in May – July.
- Data is stored in the Montana Natural Heritage Program database.
- Species density, occupancy rates, and habitat associations are modeled for species detected on surveys.
- Reports prepared and distributed to partners by late winter of the following year.

Current funding partners:

- U.S. Forest Service, Northern Region
- Bureau of Land Management
- Montana Fish, Wildlife and Parks
- Great Northern Landscape Conservation Cooperative
- Northern Great Plains Joint Venture

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